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8 DR. WRENN: Well, they said it would be after
9 midnight, and they were right. Well, thank you
10 everybody for staying up. Later. I've spoken to
11 emptier rooms before. Giving the last paper at the
12 Health Physics Society Meeting of the whole week, I
13 knew everybody in the audience. They were all good
14 friends or were intense enemies, either way. My name
15 is MacDonald E. Wrenn. I have a PhD in environmental
16 health sciences and nuclear engineering from New York
17 University.

18 I am here at my own expense. I am not
19 employed by any of the protagonists here. Since April
20 16th, I turned 65, and officially retired from my
21 position as Professor of Pharmacology at the University
22 of Utah School of Medicine. I read about the meeting
23 two days ago in the internet edition of the "Las Vegas
24 Review Journal," which I read every day. And thought a
25 little bit and said, I ought to go to that, because I

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1 was a member of the American Physical Society Study
2 Group on Nuclear Fuel Cycles and Waste Management. And
3 we produced a big thick report which I could not rest

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4 from the University of Nevada at Las Vegas library,
5 because it's bound with four other reports about this
6 thick, and it's one of their precious copies in the
7 basement. They will hardly let you get your hands on
8 it even. But they will let you take it on the first
9 floor. They'll bring it up for you, they won't let you
10 go to the basement yourself. Which is fine with me.
11 Since I don't climb stairs too well any more.

12 I mentioned that's there, because some of you
13 might want to go read it. Here's the author page, 12
14 physicists who had migrated into fields, like allied
15 fields, like the ones I did, radiobiology, and we had
16 two geologists, two physicists who had become
17 geophysicists, geologist, physicists, really, and so
18 on, and we, we had the job -- I'm going to try and
19 read -- boy, the print was really little in that issue.
20 I didn't think it was so little back in 1978.

21 (LAUGHTER)

22 Okay. The study was undertaken under the
23 auspices of the American Physical Society, as an
24 independent evaluation of the technical issues in the
25 use of fissionable materials and nuclear fuel cycles,
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1 together with their principle economic and
2 environmental health and safety implications.
3 Processing was also examined.

4 Now this was in 1976 that we had this
5 committee going. We spent the summer at Los Alamos.
6 We had a third of a million dollars from the National
7 Science Foundation to do the study. If we needed to
8 talk to anybody in waste management, we brought them
9 there. So we were not short on either money or brains.
10 It was a very brilliant committee, if I may modestly
11 say so. But I, I just reread the chapter on, Chapter 7
12 on high-level and TRU waste management, very well
13 written, and I've pulled out just a few items which I
14 thought I would bring up to the group for your
15 consideration.

16 I do not speak for the study group, as it was
17 disbanded upon completion of the task to avoid anybody
18 speaking for it. We let the report speak for it, but I
19 have lifted some sections from the report, or done my
20 best to paraphrase them. Without changing any of the
21 importance. It speaks to a lot of the concerns and
22 even ideas that have been brought up here tonight by
23 various of the participants.

24 MODERATOR BROWN: You've got about a minute
25 left.

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1 DR. WRENN: Okay. My position, I do support
2 the DOE process to place a long-term spent reactor fuel
3 repository at the Nevada test site. I believe the
4 decision should be made on the basis of science and
5 engineering, not politics. That's true science and
6 engineering. I will list the reasons.

7 I believe the orderly management of our
8 nuclear power reactor spent fuel is long overdue. The
9 benefits will be for us, our children, our
10 grandchildren, the State of Nevada, the United States,
11 and the world. Economic benefits to the state include
12 long-term addition of some financial stability to the
13 Beatty area, which has suffered severely from the
14 economic dislocations caused by the shutdown of gold
15 mining activities there. Replace nuclear power
16 generation on a surer foundation. Help the U.S. deal
17 on a more orderly manner with the problem of dwindling
18 fossil fuel reserves and other resources. Restore
19 citizens' faith in the ability of the federal
20 government to management waste for the long-term, and

21 alternatively, government has said it's too important
22 to be taken on by any other organization. Restore the
23 credibility of the U.S. government abroad and nuclear
24 energy and energy development.

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25 If the U.S. Senate had not overwhelmingly

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1 rejected the Kyoto Treaty limiting CO2 emissions to the
2 atmosphere, supplementation would require shutting down
3 all coal-burning electricity generating plants in the
4 United States. And if global warming continues, we may
5 yet face a curtailment in fossil-generated electricity.
6 Then it would be advantageous to have the nuclear
7 generating option to mitigate widespread economic
8 disemployment and distress. By the way, there are half
9 a dozen papers in the literature that show that
10 generating electricity by nuclear energy is the safest
11 of all the alternative of the fossil fuels.

12 MODERATOR BROWN: If you can just give
13 concluding statement.

14 DR. WRENN: I have a couple of other
15 statements I've got, but I'll just read the ones that
16 are important. The committee felt that the
17 hydrologic -- the only credible way for significant

18 amounts of radioactivity to eventually leave a
19 repository site is by hydrogeologic transport. Okay.
20 And this was after a great deal of thought. And the
21 rate of transport of the radionuclides is much lower
22 than the convection rate of water flow, except for
23 tritium 3 which is limited amount in fuel and it would
24 remove with the water being a, an isotope of hydrogen.

25 I tried my talk out on a freshman student at

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1 Mojave College this morning. And she liked a little
2 trick I'm going to give you quickly. Which helps with
3 back-of-the-envelope calculations. You multiply the
4 half life by a factor of 3.3, which anybody can do with
5 a calculator. You don't need to be a physicist now to
6 do this. That gives you the tenth life, the time over
7 which 90 percent of the radioactivity in a given
8 isotope will decay. After two tenth lives, there's
9 only 1 percent of the activity left. Six tenth lives,
10 one 1-millionth. In fuel, spent fuel the longest live
11 nuclides from fission are cesium 137, strontium 90,
12 half life of 30 years, tenth life of a century. That
13 makes for simple calculations. For reprocessed waste
14 which are devoid of the long life activities. Every

15 century, 10 percent. Now you can do the calculations

16 yourself. Excuse me for --

17 MODERATOR BROWN: If you can add the rest of

18 that, you can submit that for the record.

19 DR. WRENN: I will submit a written copy for

20 the record.

21 MODERATOR BROWN: Okay, that's great. Thanks

22 very much.

23 (APPLAUSE)

24 DR. WRENN: I wanted to let everybody know, I

25 enjoyed all the speakers on both sides, and I wrote a

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1 little something up here that might have been used a

2 little earlier. I said --

3 MODERATOR BROWN: Let me -- we've still got

4 about 10 or 12 people to go, so if you can submit that

5 for the record, we'll be glad to record that, thanks.

6 DR. WRENN: I say, let us agree to disagree,

7 and agree not to be disagreeable.

8 MODERATOR BROWN: Okay.

9 DR. WRENN: That was pretty fast.